Reuse Working Group – Report Back

Chair: Chris A. Mattmann (NASA JPL)
Co-Chair: Bob Downs (SEDAC)
Presenter: James Marshall (Innovim)

8th Earth Science Data Systems Working Group Meeting
Wilmington, Delaware
October 20–22, 2009

Reuse Agenda and Summary

- Discussion of decadal survey missions and reuse
- Discussion of packaging and distributing reusable assets
- Discussion of Reuse Readiness Levels
- WG leadership changes
- Planning for 2010

Decadal Survey Missions (1 of 2)

- How can we map existing components and systems available for reuse to the SDS common components?
- RES has to be “drop dead” simple – can’t be any more complicated than existing similar systems
- Reuse is being done – not sure how SOA it is, but it is driven by cost (to reduce cost)
- Should there be a liaison from the WG to the decadal survey missions?
- Might make sense to do reuse workshop for decadal survey and decadal-like missions (e.g., NPP, OCO)
  - Real savings through reuse
  - May influence 2nd tier decadal survey missions
- Make RRLs a “powerful” statement to use at a CDR, similar to how TRLs are used

Decadal Survey Missions (2 of 2)

- Work with decadal missions to identify who is responsible for informing reuse and implementation of open source
  - Engage the IPP offices early
  - Have a project person responsible for software and innovation, can't be split across data system people
  - Start as early as possible
  - Embed RRL into NTRs
  - Use common software licenses
  - Benefits of the WG intervention seen *at this meeting*
  - Look at other artifacts besides just code
- Software specifications and issues in future "Decadal-like" mission contracts to facilitate reuse
  - Software licenses
  - NTRs/IPP
  - Reuse of architectures and other artifacts (design, reqs, algs, …)
  - Dissemination of software components
  - Allocation of explicit personnel

Packaging/Distributing Assets

- Invited talk by John Schnase (NASA GSFC)
  - Invasive Species Forecasting System and packaging and distribution of reusable assets
- Should look at Maven, PyPI, and other existing systems for guidance on packaging (e.g., information provided) – use what's already done in practice
- Object diagram of metadata for reusable assets that captures cardinality (1-to-1, 1-to-many, etc.)
- Fit packaging, context, and suggested packaging contents within OAIS and suggest to SPG

Reuse Readiness Levels

- General topics
  - How do software assets mature in terms of RRLs?
  - Context important
  - Enabling adoption of RRLs
- Use cases
  - Mapping categories to ESDS (real systems in science processing, DAAC, and analysis systems)
  - Include use cases in RRL document, showing map between the RRLs and use cases
- RRL calculator
- Process for assessing assets using RRLs
  - Not just software, but other assets, from categories of providers
  - Perform assessments based on use cases, in each category of use case

Invited Talks

- Dale Clarke with Melissa Jackson (NASA GSFC, IPP Office)
  - NASA software release process
- John Schnase (NASA GSFC)
  - Invasive Species Forecasting System and packaging and distribution of reusable assets

WG Leadership Changes

- Chair
  - Outgoing: Robert E. Wolfe (NASA GSFC)
  - Incoming: Chris A. Mattmann (NASA JPL)

- Co-chair
  - Outgoing: Al Fleig (PITA Analytic Sciences)
  - Incoming: Bob Downs (SEDAC)

Thank you, Robert and Al, for your service to our WG.

Plan for 2010 – Major Tasks

- Decadal survey missions
  - Plan for a workshop with missions to discuss reuse
  - Identify tangible benefits in missions (e.g., ICESat 2's reuse of ICESat, metrics, cost savings)
- Best practices and guidelines
  - Continue RRL work, including putting all items in one document and performing assessments of existing assets
  - Map ICESat metrics, etc. to RRLs
- Reuse Enablement System (RES)
  - Develop a roadmap for moving forward with proposed system
  - Identify gaps to following roadmap
- General
  - Strengthen the case for reuse to demonstrate achievement of reuse benefits
  - Work to get reuse product(s) into projects (e.g., RRLs into NTRs, liaisons between WG and missions)

2010 Challenges

- Reaching out to other Earth science domains
  - Modelling community in particular
- Keeping connections with ESIP

Web Sites and Contacts

- Software Reuse Portal Web Site
  - http://www.esdswg.com/softwarereuse
- Collaboration Web Site
  - http://www.sciencedatasystems.org/reuse/default.aspx
- Monthly Telecons
  - Third Wednesday of the month @ 2 pm Eastern time
- Support Contact (including mailing list)
  - Jim Marshall (James.J.Marshall@nasa.gov)

Backup Slides

Plan for 2009 – Tasks (1 of 3)

- Reuse Enablement System (RES)
  - ***Develop implementation plan – need plan for deployment***
  - Complete test plan and use to test prototype
  - ***Vet RES policies (internally and externally)***
  - Continue planning for RES based on direction from NASA HQ, with aim to ***deploy the prototype for NASA internal use***
- Reuse portal web site
  - Provide more content and keep up to date
  - Promote portal to community
  - Add RES roadmap (and schedule for RES deployment eventually)

Higher priority

Plan for 2009 – Tasks (2 of 3)

- Provide incentives for reuse
  - ***Continue with WG peer award next year***
  - ***Continue to work to develop a NASA reuse award process***
  - Work on recommendation for HQ to develop a funding opportunity to make assets/components reusable (within the ES community)
- Metrics/measurements
  - Continue to generate/analyze statistics for portal web site
  - ***Assess effort required to package assets for reuse***
  - ***Assess effort required to distribute/release assets for reuse***
  - Consider use of RES to collect metrics
  - Develop impact metrics from Peer-recognition recipients

Higher priority

Plan for 2009 – Tasks (3 of 3)

- Promote reuse
  - Continue publications in journals and presentations at conferences
  - Prototype a process for facilitating reuse through mentoring
  - ***Continue developing RRLs (work with SPG)***
- Policy
  - ***Continue working with Innovative Partnerships Program Office to understand and facilitate software release process***
  - ***Work to understand and change the process, to lower the barrier(s) for certain types of software if possible***
- Data Life Cycle (DLC)
  - ***Work with "new" DLC group to help with persistent (re)use areas***
- Decadal survey
  - ***Tie reuse efforts to the decadal survey missions***
  - ***Prepare for reuse as key part of (and asset for) new missions***

Higher priority